

REMARKS/ARGUMENTS

Reconsideration of the application is requested.

Claims 1-17 remain in the application. Claims 1, 2, 6-10, 12, 13, 15, and 17 have been amended.

In the first paragraph under Claim Rejections-35 U.S.C. § 112 on page 2 of the above-identified Office Action, claims 2-17 have been rejected as being indefinite under 35 U.S.C. § 112, second paragraph.

More specifically, the Examiner has raised several questions and issues concerning the clarity of certain claim language. Each of the Examiner's statements have been addressed below and the claims have been revised to clarify the objectionable language and in applicants belief overcome the rejection under § 112, second paragraph.

In claim 2 the "component parts" correspond to M1-Mn described in detail in the instant specification (e.g., see lines 14-20 on page 6 of the instant specification) and shown in the single figure of the instant drawings. The paragraph at the top of page 13, lines 1-7, has been amended to include

language from the original claims and to recite "...modules or component parts...."

In claim 3 the "further high frequency interference signals" and their generation are described on page 13, lines 9-13 and page 17, lines 15-20 of the instant specification. These high-frequency signals are normally produced in the circuitry by the various components and connections.

Claim 7 has been revised to recite "said RF filter device has a capacitor connected to a reference-ground potential, said capacitor removing the high-frequency interference signals" to clarify the claim language and positively state the function of the capacitor. The new language is believed to address and overcome the Examiner's objections. This feature is further described on page 15, lines 10-15 of the instant specification.

In claim 12 and in the other claims the term "energy" has been replaced with the more commonly used term --power-- in order to address and overcome the Examiner's concerns. The claim also has been amended to remove the language objected to by the Examiner and to clearly recite the functional operation of the capacitor. Claim 12 now recites "said capacitor is dimensioned such that power fed through said lines, connected

to said RF filter device, can be drawn completely from said capacitor during recharging of said capacitor."

In Claim 15, the language objected to by the Examiner has been amended to recite that the resonances resulting from the capacitors are reduced so as not to interfere with operation of the integrated circuit. This feature is further described on page 17, lines 1-13 of the instant specification.

The function and structure of the resistor (R1, R2, R3) recited in claim 16 is described in detail on page 10, lines 23-26 and page 17, lines 1-17 of the instant specification. It is well-known that resistors may generate heat when current passes through them. Claim 16 merely recites that resistors of a particular value can achieve that desired result in the context of the present invention.

The language of claim 17 has been amended to recite a plurality of RF filter devices and that each of the devices is associated with a different one of the component parts. This feature is described in detail on page 13, lines 15-26 of the instant specification.

Support for these changes may be found on pages noted above of the instant specification.

It is accordingly believed that the claims meet the requirements of 35 U.S.C. § 112, second paragraph. The above noted changes to the claims are provided solely for clarification or cosmetic reasons. The changes are neither provided for overcoming the prior art nor do they narrow the scope of the claim for any reason.

In the second item under Claim Rejections-35 USC § 102 on page 3 of the above-identified Office Action, claims 1-17 have been rejected as being anticipated by Frech et al. (US 6,043,724) (hereinafter "Frech") under 35 U.S.C. § 102(b).

The rejection has been noted and claim 1 has been amended in an effort to even more clearly define the invention of the instant application. Support for the changes is found on page 2, line 23 to page 3, line 17 and page 4, line 6 to page 5, line 17 of the specification of the instant application.

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful. Claim 1 calls for, *inter alia*, an integrated circuit, having:

a radio-frequency (RF) filter device connected to the lines and **being completely integrated in the integrated circuit for preventing and restricting a propagation of high-frequency interference signals** through the lines. (emphasis added)

According to the present invention there is provided an integrated circuit which has integrated in it an RF filter device which can prevent or restrict the propagation of high-frequency interference signals through lines carrying DC voltages or low-frequency voltages. As a result, interference with the operation of the integrated circuit and/or of other integrated circuits or of other components of the system containing the integrated circuit can be prevented in a very simple yet extremely effective manner.

The integration of the RF filter device in the integrated circuit according to the present invention is advantageous in many respects.

One advantage is that the RF filter device provided in the integrated circuit can effectively block RF interference signals that reach the integrated circuit and/or are generated in the integrated circuit. There are two reasons for this. First because the RF interference signals can be filtered out directly where their occurrence would be interfering, or where

they are generated, and second because the elements from which the RF filter device is constructed, that is to say, in particular, one or more capacitors and, if appropriate, one or more resistors, can be optimally dimensioned or constructed and retain their properties substantially unchanged under all circumstances.

Because the RF interference signals can be filtered out directly where their occurrence would be interfering, or where they are generated, the RF filter device can also filter out interference signals which arise only within the integrated circuit. These include, for example, those interference signals which are generated by constituent parts of the integrated circuit that is being protected, and/or interference signals which are carried into the integrated circuit by the action of electromagnetic radiation on lines running within the integrated circuit. External filters cannot afford the same protection against such interference signals.

In the present invention the RF filter devices integrated in the integrated circuit can be optimally dimensioned because the properties of the components used therefor, i.e. the capacitances, resistors, etc., can be exactly adapted to the individual requirements without any difficulties. In contrast

to this, discrete components required for external filters of the prior art have to be selected from among commercially available components, which generally have only predetermined standard values. The present RF filter device can be constructed specifically for its intended purpose.

Also, as described in the instant specification, RF filter devices integrated in the integrated circuit retain their properties substantially unchanged under all circumstances because, in particular, capacitors integrated in integrated circuits have substantially exclusive capacitive properties. In contrast to this, in the prior art capacitors formed as discrete elements also have inductive properties. The equivalent circuit diagram of such a capacitor contains a series circuit formed by a capacitor and a coil, resulting in a capacitor in the form of a discrete component being an LC series resonant circuit. As is well-known, LC series resonant circuits have capacitive properties for frequencies lying below the resonant frequency, and inductive properties for frequencies lying above the resonant frequency. Therefore, an external filter constructed using a discrete component capacitor can fulfill its task only for frequencies lying below the resonant frequency. Capacitors integrated in integrated circuits are formed by electrically conductive structures on contiguous layers of the integrated circuit and

the capacitors therefore have no or negligible inductive properties. As a result, such capacitors can fulfill their task into the highest frequency ranges.

The provision of the RF filter device integrated in the integrated circuit at least partially obviates the need to provide external filters and/or to use particular circuit layouts.

The Frech reference discloses a two-stage power noise filter having on and off chip capacitors. In Frech the first stage capacitor is located off-chip and the second stage capacitor is located on-chip. This is best shown in Fig. 1 of Frech in which the first stage capacitor CMCM is located off-chip (see col. 3, lines 35-36). The second stage capacitor CVC0 is located on-chip as shown in Fig. 1. The structure of the low pass filter "minimizes all off-chip parasitic elements (R and L)..." (see col.2, lines 54-55). Moreover, Frech discloses that mid-frequency is in the range of 10 to 100 Mhz and high frequency mean frequencies above 100 Mhz, in contrast to the Examiner's statement that Frech's filter removes "high frequency signals...from 10MHZ to 100MHZ, column 2 lines 55-67...." Thus, it is apparent that Frech does not disclose an RF filter device that is completely located in the integrated circuit which it is constructed to protect as claimed.

Clearly, Frech does not show "a radio-frequency (RF) filter device connected to said lines **and being completely integrated in the integrated circuit** for preventing and restricting a propagation of high-frequency interference signals through said lines" (emphasis added) as recited in claim 1 of the instant application.

It is accordingly believed to be clear that none of the references, whether taken alone or in any combination, either show or suggest the features of claim 1. Claim 1 is, therefore, believed to be patentable over the art. The dependent claims are believed to be patentable as well because they all are ultimately dependent on claim 1.

In view of the foregoing, reconsideration and allowance of claims 1-17 are solicited.

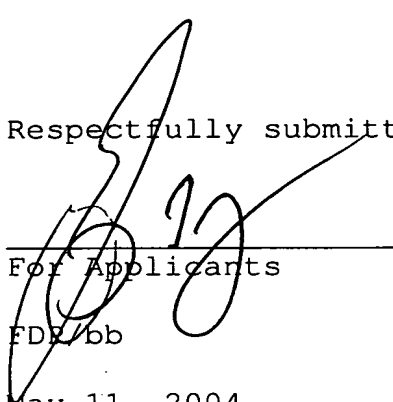
In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate receiving a telephone call so that, if possible, patentable language can be worked out.

If an extension of time for this paper is required, petition for extension is herewith made.

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Please charge any other fees that might be due with respect to
Sections 1.16 and 1.17 to the Deposit Account of Lerner and
Greenberg, P.A., No. 12-1099.

Respectfully submitted,



For Applicants

FDE/bb

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Gregory L. Mayback
Reg. No. 40,719

Lerner and Greenberg, P.A.
Post Office Box 2480
Hollywood, FL 33022-2480
Tel: (954) 925-1100
Fax: (954) 925-1101